

CLAIMS

What is claimed is:

1. A dispensing system comprising:

a dispenser, wherein the dispenser comprises:

5 a feeder bowl for receiving items;

a first vibration device for vibrating the feeder bowl;

one or more dispensing paths positioned around the feeder bowl; and

10 a rotation drive for rotating the one or more dispensing paths, wherein the one or more dispensing paths comprise at least one second vibration device for vibrating the one or

more dispensing paths proportionately to at least one physical characteristic of the items; and

15 one or more dispensing heads, wherein each of the one or more dispensing heads receives items from at least one of the one or more dispensing paths and comprises:

a dispensing chute for directing a first plurality of the received items toward the dispenser, wherein the at least one physical characteristic of each of the first plurality of the received items is within a predetermined range of physical characteristics; and

20 a diversion chute for directing a second plurality of the received items away from the dispenser.

2. The dispensing system of claim 1, wherein each of the one or more dispensing paths receive the items directly from the feeder bowl.

25 3. The dispensing system of claim 1, wherein each of the one or more dispensing paths comprises at least one channel for dispensing items singularly.

4. The dispensing system of claim 3, wherein a width and a depth of each of the channels increases as the channels extend from the feeder bowl.

5. The dispensing system of claim 1, wherein the at least one second vibration device comprises a plurality of second vibration devices, each of which second vibration devices vibrates a respective dispensing path to dispense the items singularly.

25 6. The dispensing system of claim 5, wherein each of the plurality of second vibration devices vibrates each of the dispensing paths in two intersecting planes.

7. The dispensing system of claim 1, wherein the at least one physical characteristic is selected from the group consisting of a density of each of the items, a volume of each of the items, and a weight of each of the items.
8. The dispensing system of claim 1, wherein the at least one second vibration device
5 vibrates each of the dispensing paths in at two planes, the at least two planes being transverse to one another.
9. The dispensing system of claim 1, further comprising one or more sensing units, wherein each of the one or more sensing units measures the at least one physical characteristic of at least a portion of the items dispensed from at least one of the one or more dispensing paths.
10. The system of claim 1, wherein the at least one physical characteristic of at least one of the second plurality of the received items is greater than or less than the predetermined range of physical characteristics.
11. The dispensing system of claim 10, wherein each of the dispensing heads further comprises at least one holding chamber, wherein the at least one holding chamber directs the first
15 plurality of the received items to the dispensing chute, and directs each of the second plurality of the received items to the diversion chute.
12. The dispensing system of claim 10, further comprising means for releasing the second plurality of the received items from the one or more dispensing heads.
13. The dispensing system of claim 12, further comprising:
20 a feeder bowl for receiving the items and for supplying the items to the one or more dispensing paths; and
means for separating the second plurality of the received items released from the dispensing head, which have the at least one physical characteristic within the predetermined range of physical characteristics, from the second plurality of the received items released from
25 the dispensing head, which have the at least one physical characteristic greater than or less than the predetermined range of physical characteristics.
14. The dispensing system of claim 13, further comprising means for delivering the second plurality of the received items released from the dispensing head, which have the at least one physical characteristic within the predetermined range of physical characteristics to the feeder
30 bowl.

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15. The system of claim 14, wherein the means for separating comprises at least one strainer.
16. The system of claim 14, wherein the means for delivering comprises a conveyer.